

REMARKS

In view of the above amendments and the following remarks, reconsideration and further examination are respectfully requested.

I. Amendments to the Specification and Abstract

The specification and abstract have been reviewed and revised to improve their English grammar. The amendments to the specification and abstract have been incorporated into a substitute specification and abstract. Attached are two versions of the substitute specification and abstract, a marked-up version showing the revisions, as well as a clean version. No new matter has been added.

II. Amendments to the Drawings

As mentioned above, proposed drawing amendments are submitted herewith under a separate cover letter.

Specifically, figures 5-8 have been amended to be identified as prior art, as requested in the objection on page 2 of the Office Action. These drawing amendments are editorial in nature and do not add new matter to the application.

Thus, in view of the above, withdrawal of the objection of figures 5-8 is respectfully requested.

III. Claim Amendments

Claims 1-14 have been amended to make a number of editorial revisions thereto. These editorial revisions have been made to place the claims in better U.S. form. Further, these editorial revisions have not been made to narrow the scope of protection of the claims, or to address issues related to patentability, and therefore, these amendments should not be construed as limiting the scope of equivalents of the claimed features offered by the Doctrine of Equivalents.

IV. 35 U.S.C. § 112, Second Paragraph Rejections

Claims 1-14 were rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the rejection states that claim 1 requires “applying heat and pressure to the laminated structure,” wherein this step is allegedly unclear, since the structure is not laminated until the heat and pressure is applied. This portion of the 35 U.S.C. § 112, second paragraph rejection is respectfully traversed.

As recited in the claim, described in the specification, and as illustrated in figures 1 and 2, the claimed laminated structure 110 is formed from prepreg sheets 1a and 1b. These prepreg sheets 1a and 1b have been previously formed by lamination (see page 16, lines 3-13; and page 16, line 25 – page 17, line 5). Further, once the claimed laminated structure 110 is formed, then heat is applied to the laminated structure 110 to laminate the lamination plates 6a and 6b,

prepegs 1a and 1b, and the core circuit board 10 (see page 17, lines 13-26).

Thus, as recited in claim 1 and as described in the specification, the entire laminated structure 110 is formed prior to the heat and pressure being applied to the entire laminated structure 110. Therefore, in view of the above, it is respectfully submitted that the above-mentioned phrase recited in claim 1 is not unclear, and withdrawal of this portion of the 35 U.S.C. § 112, second paragraph rejection is requested.

Additionally, the above-mentioned 35 U.S.C. § 112, second paragraph rejections states that the preamble of claim 12 is unclear, since the body of claim 12 does not specifically require any steps that manufacture the multi-layer board. This portion of the rejection is believed clearly inapplicable to claim 12, since claim 12 has been amended to avoid the problems identified by the Examiner and to otherwise comply with the requirements of 35 U.S.C. § 112, second paragraph. Therefore, withdrawal of this portion of the 35 U.S.C. § 112, second paragraph rejection is respectfully requested.

V. 35 U.S.C. § 103(a) Rejection

Claims 1, 3, 5-9, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of the admitted prior art (see pages 1-4, 8 and 9 of the specification) and Pommer (U.S. 6,560,844). Further, claims 2, 4 and 10-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over various combinations of the admitted prior art, Pommer, Ikeguchi et al. (JP 57011026), Shirasawa et al. (U.S. 4,614,559), Del (U.S. 4,180,608) and Levit (U.S. 2005/0230072). These rejections are respectfully traversed and are believed clearly inapplicable to amended independent claims 1 and 12 and claims 2-11, 13 and 14 that depend

therefrom for the following reasons.

Independent claim 1 recites a method of manufacturing a multi-layer circuit board including a core circuit board (with a circuit pattern) and a prepreg sheet. Further, claim 1 recites forming a laminated structure from (i) a laminated member including the core circuit board and the prepreg sheet and (ii) a pair of lamination plates, the laminated member being sandwiched between the pair of lamination plates. Claim 1 also recites applying heat and pressure to the laminated structure. Finally, claim 1 recites that a thermal expansion coefficient of the pair of lamination plates is equivalent to a thermal expansion coefficient of the core circuit board. The admitted prior art and Pommer, or any combination thereof, fail to disclose or suggest the above-mentioned distinguishing features as recited in independent claim 1.

Initially, please note that the above-described 35 U.S.C. § 103(a) rejection acknowledges that the admitted prior art fails to disclose or suggest the features of the thermal expansion coefficient, as recited in claim 1. In light of the above, this rejection relies on Pommer for teaching the above-mentioned features which are lacking from the admitted prior art.

However, Pommer merely teaches that an alignment plate 10 is used to laminate layers 30 by stacking and sandwiching layers 30 between release sheets 22 and 24 (see Fig. 1 and col. 1, line 66 to col. 2, line 2). Further, Pommer teaches that the alignment plate 10 preferably has the same thermal coefficient of expansion as the layers 30 (see col. 2, lines 3-5). Additionally, Pommer teaches that it is preferable that each layer 30 has a similar thermal coefficient of expansion, so that each layer 30 will expand in a similar manner (see, col. 2, lines 44-49).

Thus, in view of the above, it is clear that Pommer teaches that each individual layer 30 has a similar thermal coefficient of expansion and that the alignment plate 10 has a similar

thermal coefficient to the thermal coefficient of each layer 30, but still fails to disclose or suggest a multi-layer circuit board including a core circuit board (with a circuit pattern) and a prepreg sheet, wherein a thermal expansion coefficient of the pair of lamination plates (sandwiching the core circuit board and the prepreg sheet) is equivalent to a thermal expansion coefficient of the core circuit board, as required by claim 1.

In other words, although Pommer teaches that each layer and the alignment plate have a similar thermal expansion coefficient, Pommer still fails to disclose or suggest specifically that the thermal expansion coefficient of the core circuit board is similar to that of the pair of lamination sheets, as recited in claim 1.

Therefore, because of the above-mentioned distinctions it is believed clear that claim 1 and claims 2-11 that depend therefrom would not have been obvious or result from any combination of the admitted prior art and Pommer.

Furthermore, there is no disclosure or suggestion in the admitted prior art and/or Pommer or elsewhere in the prior art of record which would have caused a person of ordinary skill in the art to modify the admitted prior art and/or Pommer to obtain the invention of independent claim 1. Accordingly, it is respectfully submitted that independent claim 1 and claims 2-11 that depend therefrom are clearly allowable over the prior art of record.

Regarding dependent claims 2-11, which were rejected under 35 U.S.C. § 103(a) as being unpatentable over the admitted prior art and Pommer in view of various combinations of Ikeguchi, Shirasawa, Del and Levit (secondary references), it is respectfully submitted that these secondary references do not disclose or suggest the above-discussed features of independent claim 1 which are lacking from the admitted prior art and Pommer. Therefore, no obvious

combination of the admitted prior art and Pommer with any of the secondary references would result in, or otherwise render obvious, the invention recited independent claim 1 and the claims that depend therefrom.

Independent claim 12 is directed to a method and recites features that correspond to the above-mentioned distinguishing features of independent claim 1. Thus, for the same reasons discussed above, it is respectfully submitted that independent claim 12 and claims 13 and 14 that depend therefrom are allowable over the prior art of record.

VI. Conclusion

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance and an early notification thereof is earnestly requested. The Examiner is invited to contact the undersigned by telephone to resolve any remaining issues.

Respectfully submitted,

Toshiaki TAKENAKA et al.

/Andrew L. Dunlap/

By: 2008.11.04 16:12:09 -05'00'

Andrew L. Dunlap

Registration No. 60,554

Attorney for Applicants

ALD/led

Washington, D.C. 20006-1021

Telephone (202) 721-8200

Facsimile (202) 721-8250

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